

Mar 2nd, 9:30 AM - 10:45 AM

## Fatigue in Collegiate Aviation

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Mendonca, Flavio A. Coimbra Ph.D.; Levin, Erik; Keller, Julius Ph.D.; and Teo, Aaron, "Fatigue in Collegiate Aviation" (2020). *National Training Aircraft Symposium (NTAS)*. 11.

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## Fatigue in Collegiate Aviation

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PURDUE AVIATION TECHNOLOGY



# **OVERVIEW**

**Introduction**

**Purpose of the Study**

**Methodology**

**Results**

**Discussion & Conclusions**

**Future Studies**

## INTRODUCTION

- ✈ Pilot's fatigue is a significant hazard in flight operations;
  - ✈ Studies have demonstrated a relationship between increasing fatigue and increments of human factors issues!
- ✈ Multidimensional construct – no single mitigation strategy will be effective!
- ✈ Fatigue mitigation strategies include:
  - ✈ Sleep → quantity and quality;
    - ✈ Life and work balance;
    - ✈ Regular exercise;
    - ✈ Balanced diet.



## INTRODUCTION

- ✈ Flight training has received little attention in fatigue research;
- ✈ Several factors, alone or in combination, can increase the levels of fatigue by pilots in a collegiate aviation environment, such as:
  - ✈ Intensive workload and/or long workday;
  - ✈ Flight(s) rescheduled due to poor weather (or any unexpected) conditions;
  - ✈ Flights following a demanding night preparing for examinations;
  - ✈ Early flights and/or early flights followed by night flights;
  - ✈ Social activities; and
  - ✈ Night flights after a long day of academic and/or social activities.



## **PURPOSE OF THE STUDY**

- ✈ To investigate possible causes of fatigue afflicting Part 141 Collegiate aviation students;
- ✈ To investigate how pilots in an accredited Part 141 flight school perceive lifestyle factors that could assist in mitigating fatigue.

## **METHODOLOGY**

- ✈ Researchers developed and validated the Collegiate Aviation Fatigue Inventory (CAFI) survey questionnaire;
- ✈ The target population consisted of 350 pilots enrolled in a Midwestern university's accredited Part 141 flight school and a partner FBO.

## Demographics

Age		
18-25	113	92.62%
26-35	6	4.92%
36-35	2	1.64%
46-55	1	0.82%
Total	122	
Certifications and Ratings Frequencies		
Student Pilot	57	17.43%
Private	82	25.08%
Commercial	53	16.21%
Instrument	58	17.74%
CFI	29	8.87%
CFI-Instrument	6	1.83%
Multi-Engine	29	8.87%
Multi-Engine Instrument	0	0
Airline Transport Pilot	1	0.31%
Remote Pilot	12	3.67%
Enrollment Status		
Freshman	22	18.03%
Sophomore	28	22.95%
Junior	32	26.23%
Senior	26	21.31%
Graduate Student	8	6.56%
Combined Degree Program	3	2.46%
Other	3	2.46%

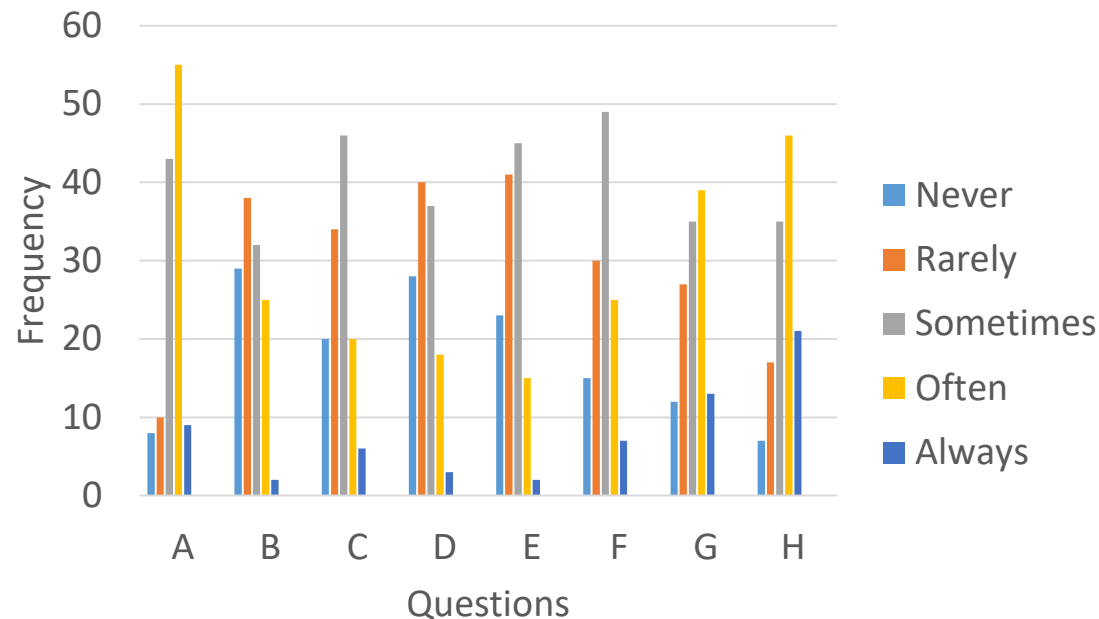
## RESULTS



# Fatigue in Collegiate Aviation

Questions	Causes of Fatigue
A	Working a long day.
B	Stress caused by family or other psychological conditions.
C	Poor scheduling of flight lessons (e.g., too early, too late, or too many).
D	Poor scheduling of academic classes.
E	Personal activities or other commitments (e.g. 2nd job).
F	Academic activities (e.g. midterms, student organizations, etc).
G	Quality of sleep (restlessness or interrupted sleep).
H	Not of enough sleep.

## RESULTS



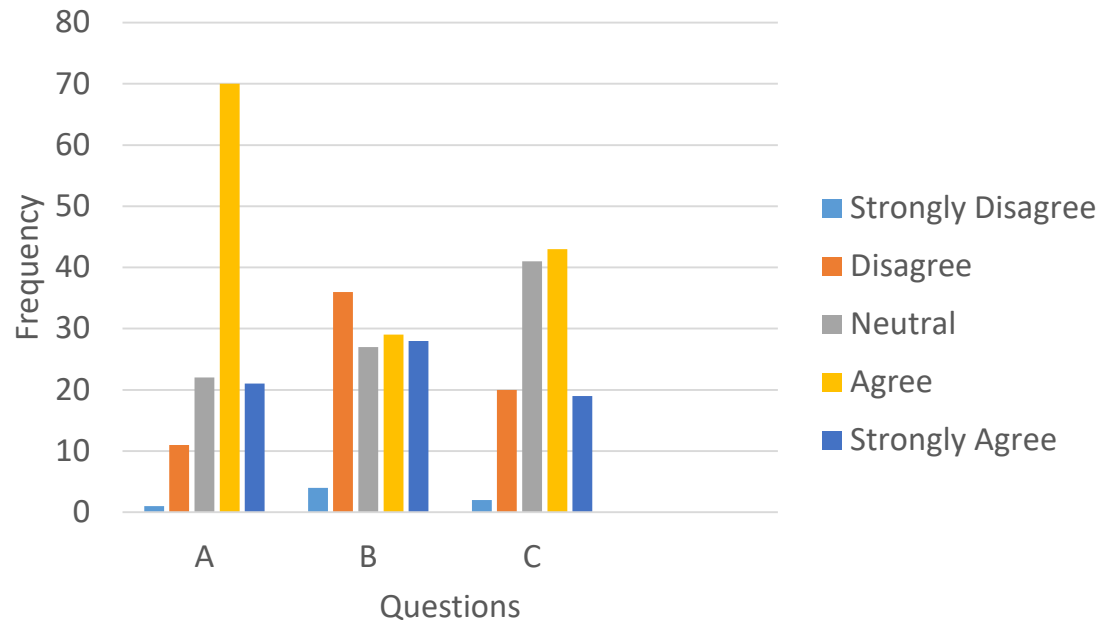


## RESULTS

- ✈ Students were encouraged to indicate other factors that contributed to fatigue during flight training;
  - ✈ High workload;
  - ✈ Inadequate sleep;
  - ✈ Improper nutrition; and
  - ✈ Poor academic scheduling.

## RESULTS

Questions	Lifestyle
A	I have a healthy work/academic life balance.
B	I exercise regularly.
C	I maintain a proper and healthy diet.



## RESULTS

- ✈ Students were given an opportunity to indicate the most significant factors inhibiting their quality and quantity of sleep;
  - ✈ High workload;
  - ✈ Issues with their bed environments that disrupted their bed time;
  - ✈ Use of electronic devices until late;
  - ✈ Caffeine or alcohol prior to bed;
  - ✈ Social commitments, and
  - ✈ Poor time management.

## DISCUSSION AND CONCLUSIONS

- ✈ High workload and inadequate sleep were the main causes of fatigue afflicting collegiate aviation students;
- ✈ A leading concern is that approximately half of the sample did not consider themselves to engage in fully adequate physical activities, nutritional habits, and workload and stress management.
- ✈ Three major themes emerged;
  - ✈ Bedtime was delayed through socializing with friends and the use of electronic devices until late at night;
  - ✈ Uncomfortable dorm environments led to sleep disturbances due to factors such as excessive noise and light at bedtime;
  - ✈ Large amount of school and other assignments affect quality and quantity of sleep.

## FUTURE STUDIES

- ✈ Collect similar data but from a larger and more diverse population of collegiate aviation students;
- ✈ **Collaboration is welcome!**
- ✈ Utilize inferential statistics procedures to investigate differences between participants and or correlations (e.g., level of enrollment x lifestyle factors);
- ✈ Measure the fatigue and sleepiness levels during different times of the day.



**PURDUE**  
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**Thank you!**

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